Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1   1.   (Currently Amended) A method comprising the steps of:

2   (a)   simulating on a processor a fabrication of a plurality of layout patterns by a lithographic

3   process;

4   (b)   determining sensitivities of the layout patterns to a plurality of parameters based on the

5   ~~simulation~~ simulating;

6   (c)   using the sensitivities to calculate deviations of the layout patterns across a range of each

7   respective one of the parameters; and

8   (d)   selecting ones of the layout patterns having predetermined deviation characteristics to be

9   used as test patterns.

1   2.   (Original) The method of claim 1, further comprising applying optical proximity

2   correction, and repeating steps (a) through (d).

1   3.   (Currently Amended) The method of claim 1, wherein step (b) includes calculating the

2   sensitivity of ~~one of the patterns~~ one pattern of the layout patterns with respect to one of the

3   parameters as a partial derivative of ~~the deviation~~ a deviation of the one pattern with respect to

4   the ~~one parameter~~ one of the parameters, based on only two values of the ~~one parameter~~ one of

5   the parameters and the corresponding two values of the deviation of the one pattern.

1   4.   (Currently Amended) The method of claim 1, wherein step (c) includes calculating the

2   deviations of the ____ layout patterns using a first degree polynomial that is a linear combination

3   of deviation portions due to each respective parameter, each respective deviation calculated

4   based on the respective sensitivity of ~~the pattern~~ one pattern of the layout patterns to that

5   parameter.

1 5. (Currently Amended) The method of claim 1, further comprising automatically selecting

2 ~~the patterns~~ ones of the layout patterns having maximum or near-maximum deviations to be used

3 as test patterns.

1 6. (Currently Amended) The method of claim 5, further comprising printing ~~the patterns~~ the

2 ones of the layout patterns having maximum or near-maximum deviations on a test chip or test

3 wafer.

1 7. (Currently Amended) The method of claim 1, further comprising selecting a plurality of

2 directions, and selecting the respective layout patterns having the maximum deviation in each

3 respective one of the plurality of directions to be used as test patterns.

1 8. (Currently Amended) The method of claim 1, wherein the predetermined deviation

2 characteristics are selected from ~~the group~~ a group consisting of maximum, near maximum,

3 minimum and near minimum deviations in a multidimensional process parameter space.

1 9. (Original) The method of claim 1, wherein the patterns are selected so as to have

2 extremal sensitivities with respect to deviations in process parameters.

1 10. (Currently Amended) A computer-implemented system comprising:

2   means for simulating on a processor a fabrication of a plurality of layout patterns by a

3 lithographic process;

4   means for determining sensitivities of the layout patterns to a plurality of parameters

5 based on the ~~simulation~~ simulating;

6   means for using the sensitivities to calculate deviations of the layout patterns across a

7 range of each respective one of the parameters; and

8   means for selecting ones of the layout patterns having predetermined deviation

9 characteristics to be used as test patterns.

1   11.   (Currently Amended) A computer-readable medium encoded with computer program

2   code, wherein, when the computer program code is executed by a processor, the processor

3   performs a method comprising the steps of:

4   (a) simulating on a processor a fabrication of a plurality of layout patterns by a lithographic

5   process;

6   (b) determining sensitivities of the layout patterns to a plurality of parameters based on the

7   ~~simulation~~ simulating;

8   (c) using the sensitivities to calculate deviations of the layout patterns across a range of each

9   respective one of the parameters; and

10   (d) selecting ones of the layout patterns having predetermined deviation characteristics to be

11   used as test patterns.

1   12.   (Currently Amended) A computer implemented system comprising:

2   means for receiving a set of priorities from a user;

3   means for selecting a subset of features of a mask having the highest error rates, using a

4   plurality of layout data;

5   means for constructing an extrema map consistent with ~~the user input;~~ a user input

6   including the set of priorities; and

7   means for identifying one or more changes to the layout data based on the extrema map.

1   13.   (Currently Amended) The computer implemented system of claim 12, further comprising

2   means for systematically selecting characterizing structures from a layout that is generated from

3   the layout data, the characterizing structures characterizing ~~the~~ lithography and process

4   performance of the layout.

1   14.   (Currently Amended) The computer implemented system of claim 13, wherein the

2   selecting of characterizing structures is based on lithographical properties of the characterizing

3   structures.

1   15.   (Currently Amended) The computer implemented system of claim ~~13~~ 14, wherein the

2   characterizing structures are selected based on the lithographical properties of the characterizing

3   structures under variation of a plurality of process parameters.

1   16.   (Currently Amended) The computer implemented system of claim 15, wherein the

2   ~~selection~~ selecting of characterizing structures includes: characterizing each process

3   parameter by a respective sensitivity of ~~the pattern~~ layout pattern to changes of that process

4   parameter; and

5   selecting a hull of a multi-dimensional process space by combining the sensitivities and

6   determining maximum and/or minimum values of the combined sensitivities.

1   17.   (Currently Amended) The computer implemented system of claim 16, wherein a function

2   modeling non-monotonic sensitivity to one of the process parameters is defined using sampled

3   extrema points.

1   18.   (Currently Amended) The computer implemented system of ~~claim 14~~claim 15, wherein

2   measurements are used to calibrate the process parameters.

1   19.   (Currently Amended) The computer implemented system of claim 18, wherein the

2   measurements are deviations in distance, covered area or critical dimension.

1   20.   (Currently Amended) An integrated circuit fabricated by a method comprising:

2   (a)   simulating a fabrication of a plurality of layout patterns by a lithographic process;

3   (b)   determining sensitivities of the layout patterns to a plurality of parameters based on the

4   simulating~~simulation~~;

5   (c)   selecting ones of the layout patterns to be used as test patterns based on the sensitivities;

6   (d)   fabricating the selected test patterns in an apparatus that performs the lithographic

7   process;

8   (e)   performing an inspection ~~of~~ on the fabricated test patterns;

9   (f)   adjusting the lithographic process based on the inspection; and

10   (g)   fabricating an integrated circuit in the apparatus using the adjusted lithographic process.